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As Mines Grow Old

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In most cases, the mines being cleared around the world were emplaced decades ago; yet the techniques and equipment being used during clearance treat them as though they were new. The author looks briefly at the effects of ageing on mines and considers possible implications.

The truth is that there has been very little formal research into the effects of ageing on mines and other types of ordnance. There are many instances in which it would be difficult or foolhardy to second-guess how a mine or munition might change, and there are many environmental factors and other variables that might prove critical. But while the issue is largely unexplored, there are already several examples that demonstrate the potential rewards of further investigation.

Steel Components

Perhaps the most predictable ageing effect is that ferrous components will eventually rust if exposed to water and air. Where spring-loaded fuze components are involved, the critical issue is whether the mechanism will become more liable to actuation through the failure of a component (such as a retaining pin), or seize and become completely inoperative.

In the case of a simple mechanism, such as the MUV fuze, 1 the latter appears more likely. Combined with the likelihood of foreign material ingress (such as fine silt) around the spring and in front of the striker, long-buried and heavily corroded mechanisms of this sort are rarely functional. That may not be good enough to declare the area safe, but it can certainly disable a fuze mechanism that relies on simple contact. As with a metallic mine, the breakdown of a plastic cas- ing or a metallic mine, the breakdown of a plastic casing or a ferrous body is likely to disable the fuze.

Plastic Mines

As the world agonised over the indefinite lifespan of plastic mines, few people paused to consider the many different types of plastic mines. The vulnerability of wood is also relevant to simple fragmentation mines, which are normally placed on short wooden stakes. Once the stakes have rotted away, the mines fall to the ground. The mine body is no longer functional. That may not be good enough to declare the area safe, but it should at least be a factor in the prioritisation of work and allocation of resources.

Triptires

Contrary to popular myth, triptire-activated mines are issued with metallic tritri- mines; the use of fishing line and other cords being a relatively rare form of improvisation. With certain exceptions (such as former Yugoslav triptires, which is plastic-coated, multi-strand stainless steel, most triptires is soft iron or mild steel and therefore liable to rust. In hot, wet climates, then, the threat from triptires is likely to disappear within a few years.

The Plastic Mine

In the early 1990s, humanitarian mine action rose to prominence under a media spotlight, largely fuelled by sensational revelations on the scale and nature of the global landmine problem. Among these was the mine’s supposed indestructible nature, with a concomitant lack of immediate concern as to whether such mines were within national borders, or whether they might cause harm to civilians after a period of years. The development of more appropriate techniques and equipment led to growing public awareness of mines as a threat.

The plastic anti-personnel mine was the focus of attention and has become such a powerful stereotype that the many other types are largely ignored. The media—along with a number of technical authorities who should have known better—created an image of a weapon that was both indestructible and untraceable. Yet, it has long been understood that time and environment take a toll on munitions, that a substantial proportion of mines are not made from plastic, and that most plastics degrade under certain conditions anyway.

In the mid-1990s—well before the term “humanitarian demining” was coined—the British Army was struggling with the aftermath of the Falklands War. Steel-cased anti-tank mines were visible on the tidal beaches of Yorke Bay, where the salt water soon rendered them incapable of being defeated safely. Meanwhile, a number of plastic mines were found to have split open, presumably due to the action of the infamous extreme weather.

Let Sleeping Mines Lie?

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In summary, the deterioration of munitions, traditional as well as modern, is a major factor in the prioritisation of work. At the very least, it should be a major factor in the prioritisation of work. Given the existing evidence, it seems foolish to ignore the possibilities.

Conclusion

Findings like these are clearly significant to demining programmes, and equipment selection and procedures should take account of changing mine characteristics. Particularly striking is the prospect that some mined areas might already be safe, while others of lower priority might be forced to endure and abandon for a number of years to gradually self-neutralise. Certification of this ground might then be more akin to area reduction rather than to full-scale clearance.

Furthermores, if the effects of ageing were better understood, it might be possible to deliberately accelerate the process. Other benefits might include the development and deployment of clearance equipment designed to exploit the mine’s vulnerability. For example, the deterioration of a casing may lead to easily detectable explosive contamination in the surrounding area. In summary, the deterioration of munitions, traditionally regarded with fear and suspicion, may have the potential to revolutionise our approach to humanitarian mine clearance. At the very least, it should be a major factor in the prioritisation of work.